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ASSIGNMENT BOOKLET 1A

SCN2285 Science 24

Module 1: Section 1 Assignment and Section 2 Assignment

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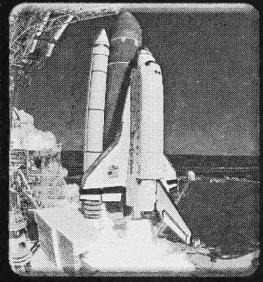
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1A

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SCIENCE 24

MODULE 1 • ASSIGNMENT BOOKLET 1A

ASSIGNMENT BOOKLET 1A • ASSIGNMENT BOOKLET 1A • ASSIGNMENT BOOKLET 1A • ASSIGNMENT BOOKLET 1A •



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Summary

	Total Possible Marks	Your Mark
Section 1 Assignment	29	
Section 2 Assignment	32	
	61	

Teacher's Comments

Science 24
Module 1: Matter and Chemical Change

Assignment Booklet 1A

Section 1 Assignment and Section 2 Assignment

Learning Technologies Branch

ISBN 0-7741-2565-9

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(camping and space shuttle)

The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Assignment Booklet.

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ASSIGNMENT BOOKLET 1A
SCIENCE 24: MODULE 1
SECTION 1 ASSIGNMENT AND SECTION 2 ASSIGNMENT

This Assignment Booklet is worth 61 marks out of the total 120 marks for the assignments in Module 1. The value of each assignment and each question is stated in the left margin.

Read all parts of your assignment carefully and record your answers in the appropriate places. If you have difficulty with an assignment, go back to your Student Module Booklet and review the appropriate lesson. Be sure to proofread your answers carefully before submitting your Assignment Booklet.

Section 1 Assignment: Understanding Matter

29

For questions 1 to 4, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

1. Which is an example of how chemistry and technology have helped farming?
- Chemical pesticides and fertilizers help produce higher yields.
 - Automatic barn cleaners and feeders are used.
 - Large tractors and cultivators allow one person to do the work of many.
 - all of the above
2. Which substance was used in making soap 100 years ago?
- lye
 - coconut oil
 - canola oil
 - water
3. Which synthetic fibre is used to produce waterproof and windproof clothing?
- cotton
 - canvas
 - Kevlar
 - Gore-Tex

(1)

_____ 4. An example of a natural fibre is

- A. polyester
- B. linen
- C. Kevlar
- D. nylon



Return to page 17 of the Student Module Booklet and begin Lesson 2.

For questions 5 to 9, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

(1)

_____ 5. A molecule that is made up of many small, identical sub-molecules is a(n)

- A. alloy
- B. polymer
- C. synthetic fibre
- D. polyester

(1)

_____ 6. Which is an example of a natural polymer?

- A. neoprene
- B. polystyrene
- C. sap from a rubber tree
- D. polyethylene

(1)

_____ 7. Which polymer are modern eyeglasses made from?

- A. polyethylene
- B. polycarbonate
- C. polystyrene
- D. polyurethane

(1)

_____ 8. The polymer used to make Styrofoam cups and insulation is

- A. neoprene
- B. polyethylene
- C. polystyrene
- D. polyurethane

(1)

_____ 9. Which alloy is mostly used to make kitchen utensils?

- A. brass
- B. iron
- C. stainless steel
- D. superplastic steel



Return to page 20 of the Student Module Booklet and begin Lesson 3.

For questions 10 and 11, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

(1)

_____ 10. The household product responsible for making bread rise is

- A. vinegar
- B. yeast
- C. citric acid
- D. baking soda

(1)

_____ 11. Which symbols show that the contents of a product are flammable and corrosive?

A.



B.



C.



D.



12. Decide whether each of the following statements is true (T) or false (F). Place your answer in the blank space given.

- (1) _____ a. A drain cleaner gives off heat when it breaks down the protein in a clogged drain pipe.
- (1) _____ b. Oxygen gas released from a chemical reaction involving yeast makes bread dough rise.
- (1) _____ c. Furniture polish can be made by mixing lemon juice and mineral oil.
- (1) _____ d. Hydrogen peroxide turns into water and oxygen when poured on a cut.
- (1) _____ e. Flatbread requires more yeast than regular bread.
- (1) _____ f. Acids react with aluminum to produce hydrogen gas.

13. Fill in the blanks with the appropriate term from the following list.

- ethanol
- carbon dioxide
- acetone
- hydrogen dioxide
- muriatic acid
- hydrogen peroxide
- gold jewellery
- paint brushes
- glassware

- (1) a. _____ reacts with lime in a steam iron to form a soluble product.
- (1) b. Methanol is used to clean _____.
- (1) c. _____ is used to dissolve nail polish.
- (1) d. _____ is a substance used to clean cuts.



Return to page 24 of the Student Module Booklet and begin Lesson 4.

For questions 14 to 17, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

- (1) _____ 14. In which of the following workplaces will you find metal paints and fillers?
- A. offices
 - B. automotive repair shops
 - C. hair salons
 - D. construction sites

- ① _____ 15. A type of chemical added to shampoo to give hair texture is
- A. insecticide
 - B. lemon juice
 - C. plastic resin
 - D. detergent
- ① _____ 16. Which of the following provides the **most** information about a chemical?
- A. product label
 - B. chemical name
 - C. WHMIS symbol
 - D. Materials Safety Data Sheet
- ① _____ 17. Soap is not good to wash your hair because soap
- A. is too acidic
 - B. is a synthetic detergent
 - C. breaks down protein
 - D. does not remove oil and dirt
18. Match each definition with the correct term from the following list. Place your answer in the blank space given.
- | | | | |
|----------------------|---------------|----------------------|---------------|
| i. synthetic polymer | ii. alloy | iii. synthetic fibre | iv. herbicide |
| v. HHPS | vi. synthetic | vii. MSDS | |
- ① _____ a. Hazardous Household Products Symbol
- ① _____ b. a chemical that kills unwanted plants
- ① _____ c. a large, chemically produced molecule that is made up of many identical sub-molecules
- ① _____ d. a mixture of several metals that looks like one metal



Return to page 28 of the Student Module Booklet and begin the Section 1 Review.

32

Section 2 Assignment: Common Reactions in Our Lives

For questions 1 to 6, read each question carefully. Decide which of the choices BEST completes the statement. Place your answer in the blank space given.

(1)

_____ 1. A basic chemical in one brand of antacid tablet is

- A. chlorine
- B. hydrochloric acid
- C. magnesium chloride
- D. magnesium hydroxide

(1)

_____ 2. The compound produced when chlorine is added to water is

- A. carbon dioxide
- B. hydrochloric acid
- C. hypochlorous acid
- D. magnesium dioxide

(1)

_____ 3. The purpose of creating carbon dioxide in bread dough is so

- A. it tastes good
- B. the bread will bake faster
- C. it will combine with the alcohol from the yeast
- D. the dough will rise, creating light baked bread

(1)

_____ 4. Sodium hypochlorite is the active ingredient in

- A. yeast
- B. bananas
- C. antacid tablets
- D. some brands of bleach

(1)

_____ 5. The substance used to indicate the presence of carbon dioxide gas is

- A. yeast
- B. chlorine
- C. limewater
- D. hydrogen peroxide

(1)

_____ 6. Inserting a glowing splint into a test tube to see if it bursts into flames is a test for the presence of

- A. oxygen gas
- B. nitrogen gas
- C. hydrogen gas
- D. carbon dioxide gas

- (3) 7. Three digestive enzymes that break down carbohydrates, fats, and proteins are _____, _____, and _____.



Return to page 35 of the Student Module Booklet and begin Lesson 2.

For questions 8 and 9, read each question carefully. Decide which of the choices BEST completes the statement. Place your answer in the blank space given.

- (1) 8. An indication that energy is given off in a chemical reaction is shown by a(n)
- A. change in colour
 - B. decrease in temperature of the solution
 - C. increase in temperature of the solution
 - D. release of an odour from the solution
- (1) 9. The reaction of vinegar and sodium bicarbonate (baking soda) is called a
- A. nuclear reaction
 - B. reverse reaction
 - C. combustion reaction
 - D. neutralization reaction
10. Match each definition with the correct term from the following list. Place your answer in the blank space given.
- | | |
|------------------------------|--------------|
| i. combustion reaction | ii. reactant |
| iii. neutralization reaction | iv. product |
- (1) a. a chemical present before a reaction begins
- (1) b. a chemical present after a reaction has occurred
- (1) c. a chemical reaction in which an acid and a base combine to produce a new compound and water
- (1) d. a chemical reaction in which fuel burns in the presence of oxygen

(2)

11. A beaker with vinegar and baking soda is tilted over a candle flame without spilling any of the liquid solution out. Briefly explain why the flame goes out.



Return to page 40 of the Student Module Booklet and begin Lesson 3.

For questions 12 to 15, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

(1)

- _____ 12. A solid that forms during a chemical reaction is called a(n)

- A. reactant
- B. precipitate
- C. reagent
- D. element

(1)

- _____ 13. Which of the following is proof that a chemical reaction has occurred?

- A. bubbles appear
- B. temperature increases
- C. colour change in the solution
- D. all of the above

(1)

- _____ 14. A small amount of manganese dioxide is added to about 5 mL of hydrogen peroxide. Which change is expected?

- A. The temperature of the solution decreases.
- B. The solution becomes a solid.
- C. Bubbles form in the solution.
- D. A precipitate forms.

(1)

- _____ 15. Dissolved calcium chloride and dissolved sodium carbonate are mixed together. What evidence is there showing that a reaction has taken place?

- A. An odour was detected.
- B. A colour change occurred.
- C. A precipitate formed.
- D. Bubbles formed.

- 2 16. List two pieces of evidence you might observe that proves that a chemical reaction has occurred.



Return to page 44 of the Student Module Booklet and begin Lesson 4.

For questions 17 to 19, read each question carefully. Decide which of the choices BEST completes the statement. Place your answer in the blank space given.

- 1 17. The use of energy from fats and carbohydrates in the body is an example of a(n)

- A. exothermic reaction
- B. endothermic reaction
- C. nuclear reaction
- D. reverse reaction

- 1 18. An example of an endothermic reaction is a(n)

- A. heat pack
- B. cold pack
- C. engine running
- D. person's metabolism

- 1 19. The decision to use a particular chemical for a hot or cold pack may be influenced by

- A. the cost of the chemical
- B. how safe it is to transport the chemical
- C. how hot or cold the chemical gets
- D. all of the above

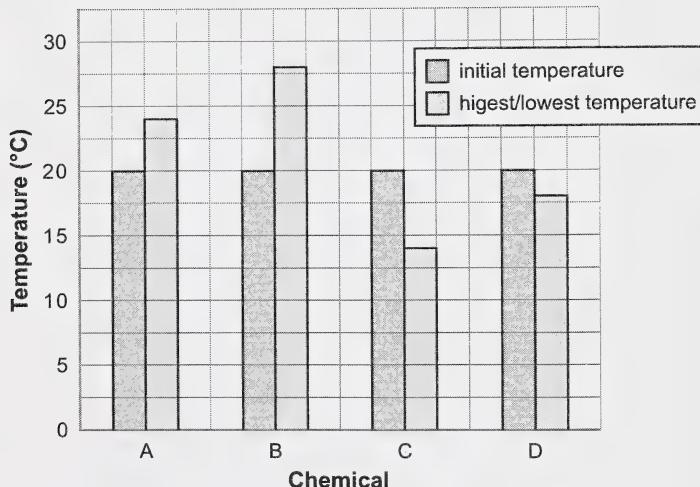
20. Match each statement with the correct term from the following list. Place your answer in the blank space given.

- | | | |
|-----------------|--------------|----------------|
| i. cold pack | ii. reactant | iii. salt |
| iv. endothermic | v. hot pack | vi. exothermic |

- (1) _____ a. a reaction that produces thermal energy
(1) _____ b. a product that produces thermal energy
(1) _____ c. a reaction that absorbs thermal energy
(1) _____ d. a product that absorbs thermal energy

21. The following bar graph shows the starting and highest/lowest temperatures reached for four chemicals dissolved in 50 mL of water.

Solution Temperatures of Four Chemicals



- (1) a. Which chemical reaction produced the most heat?

- b. Which chemical reaction absorbed the most heat?



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C.D
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ASSIGNMENT BOOKLET 1B

SCN2285 Science 24

Module 1: Section 3 Assignment and Section 4 Assignment

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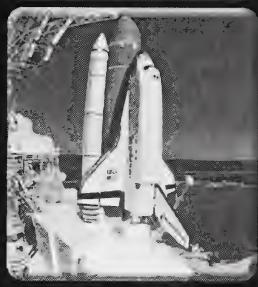
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SCIENCE 24

MODULE 1 • ASSIGNMENT BOOKLET 1B

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Summary

Teacher's Comments

	Total Possible Marks	Your Mark
Section 3 Assignment	35	
Section 4 Assignment	24	
	59	

Science 24

Module 1: Matter and Chemical Change

Assignment Booklet 1B

Section 3 Assignment and Section 4 Assignment

Learning Technologies Branch

ISBN 0-7741-2566-7

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ASSIGNMENT BOOKLET 1B
SCIENCE 24: MODULE 1
SECTION 3 ASSIGNMENT AND SECTION 4 ASSIGNMENT

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Section 3 Assignment: Types of Chemical Reactions

35

1. The left side of a word equation lists the _____. The right side of a word equation lists the _____.
2. Complete the following general word equation by inserting the required symbols.
reactant 1 _____ reactant 2 _____ product 1 _____ product 2
3. Write how you would read the following word equation:

hydrochloric acid + sodium acetate → acetic acid + sodium chloride

1. 4. Write the word equation for the following written statement:

Water and electric energy produce hydrogen gas and oxygen gas.



Return to page 53 of the Student Module Booklet and begin Lesson 2.

For questions 5 to 9, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

① _____ 5. Iron oxide ($\text{FeO}_{(s)}$) separated into solid iron ($\text{Fe}_{(s)}$) and oxygen ($\text{O}_{2(g)}$) is an example of a

- A. simple composition reaction
- B. simple decomposition reaction
- C. combustion reaction
- D. neutralization reaction

① _____ 6. In a simple composition reaction,

- A. one substance combines with another to form a salt and water
- B. two or more elements combine to form a compound
- C. a compound is broken down into two or more elements
- D. water is separated into hydrogen gas and oxygen gas

① _____ 7. fuel + oxygen \rightarrow carbon dioxide + water vapour + energy

This word equation is an example of a

- A. simple composition reaction
- B. simple decomposition reaction
- C. combustion reaction
- D. neutralization reaction

① _____ 8. hydrochloric acid + magnesium hydroxide \rightarrow magnesium chloride + water

This word equation is an example of a

- A. simple composition reaction
- B. simple decomposition reaction
- C. combustion reaction
- D. neutralization reaction

① _____ 9. Which type of reaction would most likely be endothermic?

- A. a simple composition reaction
- B. a simple decomposition reaction
- C. a combustion reaction
- D. a neutralization reaction

- 4 10. Read each characteristic listed in the table. Place a check mark (✓) in the column of the reaction type the characteristic applies to.

Characteristic	Simple Composition Reaction	Simple Decomposition Reaction
elements on the left		
elements on the right		
compound on the left		
compound on the right		
compound broken apart		
elements put together		
usually requires energy		
usually produces energy		

- 1 11. Energy from a battery is used to break down zinc iodide into its elements, zinc and iodine. Write the word equation for this reaction.
-



Return to page 59 of the Student Module Booklet and begin Lesson 3.

For questions 12 to 15, read each question carefully. Decide which of the choices BEST answers the question. Place your answer in the blank space given.

- 1 12. One of the components of club soda is carbonic acid. The chemical formula for carbonic acid is $\text{H}_2\text{CO}_{3(\text{aq})}$. How many atoms for each element are present in the formula?
- 1 hydrogen atom, 1 carbon atom, and 1 oxygen atom
 - 2 hydrogen atoms, 1 carbon atom, and 3 oxygen atoms
 - 2 hydrogen atoms, 1 calcium atom, and 3 oxygen atoms
 - 2 hydrogen atoms, 3 carbon atoms, and 3 oxygen atoms

- ① _____ 13. Which symbol indicates that a substance is a gas at room temperature and normal atmospheric pressure?
- A. (s)
B. (l)
C. (g)
D. (aq)
- ① _____ 14. Which of the following does the symbol $\text{CH}_{4(g)}$ represent?
- A. the chemical name of the substance
B. the chemical formula of the substance
C. the common name of the substance
D. the common formula of the substance
- ① _____ 15. What is the common name for hydrogen oxide?
- A. water
B. hydrogen peroxide
C. washing soda
D. laughing gas
- ④ 16. Complete the following table.

Common Name	Chemical Name	Chemical Formula
	sodium bicarbonate	
		$\text{MgSO}_{4(s)}$
	isopropyl alcohol	
table sugar		



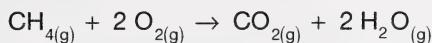
Return to page 62 of the Student Module Booklet and begin Lesson 4.

For questions 17 and 18, read each question carefully. Decide which of the choices BEST answers the question. Place your answer in the blank space given.

_____ 17. Ten billion molecules of water is decomposed into hydrogen and oxygen. How many molecules of hydrogen gas and oxygen gas are formed?

- A. 5 billion molecules of hydrogen gas and 5 billion molecules of oxygen gas
- B. 5 billion molecules of hydrogen gas and 10 billion molecules of oxygen gas
- C. 10 billion molecules of hydrogen gas and 5 billion molecules of oxygen gas
- D. 10 billion molecules of hydrogen gas and 10 billion molecules of oxygen gas

_____ 18. How many atoms of oxygen are on the product side of the following equation?



- A. 3
- B. 4
- C. 6
- D. 8

19. Decide whether each of the following statements is true (T) or false (F). Place your answer in the blank space given.

_____ a. According to the Law of Conservation of Mass, if you start with 20 g of reactants you will end up with more than 20 g of products.

_____ b. The equation $2 \text{HgO}_{(\text{s})} \rightarrow \text{Hg}_{(\text{l})} + \text{O}_{2(\text{g})}$ is balanced.

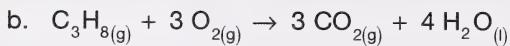
_____ c. The equation $\text{FeO}_{(\text{s})} \rightarrow \text{Fe}_{(\text{s})} + \text{O}_{2(\text{g})}$ can be balanced by inserting the coefficient 2 in two places.

20. State whether each of the following equations is balanced. **Show your work.**

(3)



(4)



Return to page 67 of the Student Module Booklet and begin the Section 3 Review.

24

Section 4 Assignment: Reactions and the Environment

For questions 1 to 5, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

- (1) _____ 1. The products of the complete combustion of a fossil fuel are
- carbon dioxide and oxygen
 - carbon dioxide and water vapour
 - carbon monoxide and oxygen
 - carbon monoxide and water vapour
- (1) _____ 2. A glass jar is placed over and lowered onto the flame of a burning candle. Evidence of incomplete combustion is shown by
- water droplets forming on the inside of a glass jar
 - soot forming on the inside of the glass jar
 - wax dripping down the side of the candle
 - the flame going out
- (1) _____ 3. Incomplete combustion occurs when
- all the fuel is burned
 - there is a shortage of carbon dioxide
 - there is too much water in the fuel
 - there is not enough oxygen
- (1) _____ 4. The correct balanced formula of the formation of nitric acid from nitrogen dioxide gas and water is
- $\text{NO}_{2(g)} + \text{H}_2\text{O}_{(l)} \rightarrow 2 \text{HNO}_{3(aq)} + \text{NO}_{(g)}$
 - $\text{NO}_{2(g)} + \text{H}_2\text{O}_{(l)} \rightarrow \text{HNO}_{3(aq)} + \text{NO}_{(g)}$
 - $\text{NO}_{3(g)} + \text{H}_2\text{O}_{(l)} \rightarrow \text{HNO}_{3(aq)} + \text{NO}_{(g)}$
 - $3 \text{NO}_{2(g)} + \text{H}_2\text{O}_{(l)} \rightarrow 2 \text{HNO}_{3(aq)} + \text{NO}_{(g)}$
- (1) _____ 5. Which of the following activities contributes to acid deposition?
- burning coal in electrical power plants
 - exhaust from vehicles
 - burning forests
 - all of the above

- (2) 6. Two gases released into the atmosphere responsible for acid deposition are _____ and _____.



Return to page 76 of the Student Module Booklet and begin Lesson 2.

For questions 7 to 10, read each question carefully. Decide which of the choices BEST completes the statement. Place your answer in the blank space given.

- (1) _____ 7. The process used to reduce the amount of sulfur dioxide released into the air from a coal-burning power plant is
- A. combustion
 - B. distillation
 - C. pollution
 - D. scrubbing
- (1) _____ 8. To reduce emissions, the component removed from natural gas before burning is
- A. carbon dioxide
 - B. nitrogen
 - C. sulfur
 - D. limestone
- (1) _____ 9. A substance added in the final stages to remove sulfur from coal is
- A. carbon
 - B. carbon dioxide
 - C. calcium carbonate
 - D. calcium oxide
- (1) _____ 10. A component of the wet slurry produced by the scrubbing process is
- A. $\text{CaO}_{(s)}$
 - B. $\text{CaSO}_{3(s)}$
 - C. $\text{CaCO}_{3(s)}$
 - D. $\text{CO}_{2(g)}$

(2)

11. Explain why lime is added to some lakes.



Return to page 79 of the Student Module Booklet and begin Lesson 3.

For questions 12 to 14, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

(1)

- _____ 12. Which metal causes the **most** concern for society regarding corrosion?

- A. silver
- B. copper
- C. gold
- D. iron

(1)

- _____ 13. Which of the following is **not** a property of iron(III) oxide?

- A. requires moisture to form
- B. comes off in flakes
- C. red-orange in colour
- D. forms a protective barrier

(1)

- _____ 14. The rusting of iron is a

- A. nuclear reaction
- B. combustion reaction
- C. simple composition reaction
- D. simple decomposition reaction

(2)

15. Why are people worried about the corrosion of steel in concrete bridges and buildings?



Return to page 82 of the Student Module Booklet and begin Lesson 4.

For questions 16 and 17, read each question carefully. Decide which of the choices BEST completes the statement or answers the question. Place your answer in the blank space given.

(1)

_____ 16. An **additional** protection method often used to prevent corrosion of iron nails is

- A. galvanizing
- B. painting
- C. using a sacrificial metal
- D. applying a polymer coating

(1)

_____ 17. Which of the following uses a sacrificial metal as a method to prevent corrosion?

- A. bridges
- B. vehicle bodies
- C. pipelines
- D. nails

18. Decide whether each of the following statements is true (T) or false (F). Place your answer in the blank space given.

(1)

_____ a. Steel used for building construction is painted to prevent water and oxygen from contacting the surface of the metal.

(1)

_____ b. A process used to coat nails with zinc is called polymerization.

(1)

_____ c. A metal that corrodes to protect another metal is called a sacrificial metal.

(1)

_____ d. Painting is the best way to permanently protect iron or steel.



Submit your completed Assignment Booklet 1B to your teacher for assessment.
Then return to page 84 of the Student Module Booklet and begin the Section 4 Review.